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Increasing Students' Communication Skills Using Stimulant Question Model

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ABSTRACT

The purpose of this study is to make Lesson Plan using stimulant questions that emphasize the communication skills. This research uses CAR method of teacher type as researcher. Respondents from this study were 27 students of the 8th of Junior High School in Salatiga. This research used 5 Lesson Plans with 5 materials. The results indicated that by giving stimulant questions, observers said that 89.22% students were more focused on learning indicated by active students who answered stimulant questions, supported by the questionnaire where 89.34% students said that stimulant questions were in an order, logical, easy to understand, and can help them in solving various problems and the stimulant questions can improve their understanding of physics learning. In addition, the evaluation test results also indicated that 87.18% students understood the material. Therefore, stimulant questions can make students to be focused more and can make them understand the learning materials better.

Keywords: communicating, result, scientific approach, stimulant, student

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1. Introduction

Basically, every student has the ability to think reflectively to solve social problems in society. Curriculum 2013 (K-13) designed by the Ministry of Education and Culture emphasizes the development of potential and character where students can have a curiosity, honesty, responsibility, logical, critical, analytical thinking and creative attitude (Hidayati & Endryansyah, 2014; Amanah, 2014). The learning pattern in the curriculum 2013 is a refinement of the previous curriculum, where teacher-centered learning pattern becomes learner-centered learning pattern, search-passive learning pattern becomes search-active learning pattern, and passive learning pattern becomes critical learning pattern (Permendikbud, 2013).

Learning Science in K-13 emphasizes the application of a scientific approach in the learning process (Sisdiknas No. 20, 2013). Scientific learning approach is a learning approach that emphasizes the importance of using scientific thinking processes in accordance with the level of development of students (Marjan, 2014; Sunarno, 2016; Wahyono, 2017). Students are encouraged to find out from various sources of information, where students act directly both individually and in groups to explore concepts and principles during learning activities, while the teachers' task is to direct the learning process carried out by students and provide corrections to the concepts and principles obtained by students (Yusmanah, 2012; Hidayati & Endryansyah, 2014). To make it easier, learning steps are in line with the spirit of one of the scientific approaches called 5M (*Mengamati*

(Observing), *Menanya* (Asking), *Mencoba* (Trying), *Menalar* (Reasoning), and *Mengkomunikasikan* (Communicating)).

From the experience gained by researchers when implementing the Teaching Experience Program (PPL), 5M steps have not been fully run in school. The learning process used tends to be teacher-dominated so that students are less actively involved in learning. There are still many students who experience difficulties in receiving material especially in physics learning. This will certainly affect the achievement of student learning outcomes.

In these 5M steps, the teacher's skill to stimulate students with stimulant questions is very useful. According to Primananda (2017) states that skill to make question aims to: 1) motivate students to engage in learning interactions; 2) train students' ability to express opinions; 3) stimulate and improve students' thinking skills; 4) arouse students' curiosity and guide students in determining answers; 5) train students in divergent thinking; 6) achieve learning goals. Thus, by mastering the skill to make question, teachers can overcome the problem of students who are unable to explore.

To master the 5M approach, it requires observing skill to bring up problems; questioning skill; experimental design skill; observing experimental results; drawing conclusion skill and communicating skill (Yusmanah, 2012; Sunarno, 2016). The observation and questioning skills have been conducted by Primananda (2017) *Peningkatan Keterampilan Eksplorasi Dengan Model Pertanyaan Stimulan Bagi Siswa SMP di Salatiga*, the skill in designing the experiment has been conducted by Machfiroh (2018) The Ability To Observe Experimental Results Through Stimulant Questions For Junior High School Students, the observation skill of the experimental results has been conducted by Nindya (2018) Skill In Designing Experiment Using The Stimulant Questions For Junior High School Students, the concluding skill has been done by Zega (2018) Stimulant Question To Help Student's Associating Skill In Making A Conclusion and the communication skill is still being studied by the author.

Based on these problems, this study aims to create an example of the Lesson Plan which emphasizes the process of communicating skills. With stimulant questions that can stimulate students to focus on learning physics, students can improve their understanding of physics learning by communicating the material that has been taught in accordance with the concept.

This research is expected to provide the benefits for teachers in terms of making a Lesson Plan that will stimulate students to focus on learning physics by communicating material in accordance with the concept. Meanwhile, benefit of this study for students is that students will be able to improve their understanding of the concept of physics learning.

2. Materials and Methods

The method used in this study was *CAR* with the type of teacher as a researcher (Prabowo, 2011). Respondents from this study were 27 8th grade students of SMP 3 in Salatiga.

Data collection procedures were carried out through several stages, namely the Planning Stage, Implementation Stage, and Reflection Stage. In the planning stage, the researcher made research instruments i.e. Lesson Plan, Observation Sheet, Evaluation Test Sheet, and Questionnaire Sheet. This research instrument uses 5 Lesson Plans with 5 materials (Magnetism, Work, Pressure on Solid Substances, Motion, and Pressure on Gas Substances). The forms of communicating were made as diverse as possible such as Test (Magnet), Applied (Work), Analysis (Pressure on Solid Substances), PR (Motion), and Making Tools (Pressure on Gas Substances). After the research instrument was made, the study proceeded to the implementation stage. At this stage, the researcher conducted data collection through KBM activities in accordance with the Lesson Plan. Observation stage is the stage when the observers filled in the observation sheet on the students' actions in the class. After the material had been taught, evaluation questions were distributed to students to be done. At the end of the student learning activities, the questionnaires were distributed to fill out. Then it proceeded to the reflection stage where the data from the results of the observation sheets, questionnaire sheets, and evaluation test sheets were processed to determine the effectiveness of the teaching and learning process (Primananda, 2017; Machfiroh, 2018; Nindya, 2018; Zega, 2018). The cycle used in this study can be seen in Figure 1.

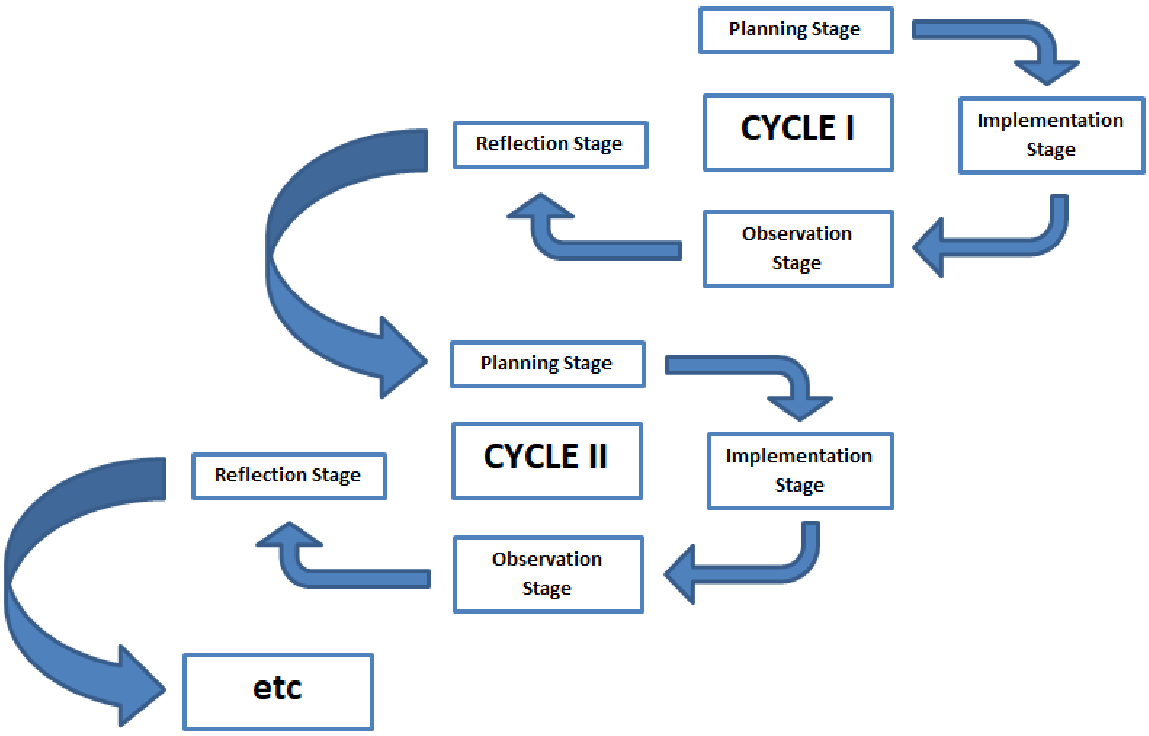

Figure 1. Design of CAR cycle.

The data obtained were analyzed descriptively and qualitatively that taken from the observation sheets, evaluation tests and questionnaires from the 5 Lesson Plans used (Arikunto & Suharsimi, 2012).

- Analysis of observation sheet data

  At a minimum, most students were able to understand and answered stimulant questions regardless their answers were correct or incorrect, so it can be concluded that effective learning and research succeed. The following references are used:

  1. No students = 0%
  2. A small percentage of students 0% $< x <$ 50%
  3. Half percentage of students = 50%
  4. Most students 50% < x < 100%
  5. All students = 100%

  The criterion for success of the observation sheet is when most students could understand and answered stimulant questions regardless students' answers were correct or incorrect.

- Data analysis of questionnaire sheets
  At least 70% of students felt enthusiastic about the learning discussed. The following formula is used:
  $$P = \frac{f}{N} X\ 100\%$$
  Description:
  P = percentage of student enthusiasm
  f = number of students who are said to be enthusiastic
  N = all of students in the class
  The criterion for success of the questionnaire sheets is that when a minimum of 70% of students were able to understand and answered stimulant questions regardless students' answers were correct or incorrect.
- Data analysis of evaluation test sheets
  At least 70% of students got a grade of ≥ 70 (KKM) on the last material. The criteria for values on the test sheet are determined by students who were able to answer the questions. The formula calculates student values as follows:
  $$Value = \frac{f}{N} X\ 100$$
  Description:
  f = number of scores obtained by students
  N = maximum score
  After the student's value is known, then the percentage of completeness is analyzed. The formula calculates the percentage of completeness as follows:
  $$P = \frac{f}{N} X\ 100\%$$
  P = percentage of student completeness
  f = frequency of students who completed KKM
  N = all of students in the class
  The criterion for success of the evaluation test sheet is that when a minimum of 70% of students were able to understand and answered stimulant questions regardless students' answers were correct or incorrect.

This study is said to be successful if the results of the observation sheets, questionnaire sheets and test sheets meet the success criteria of each indicator. If this study is successful, the study is stopped. But if this study does not meet the criteria of each indicator, the target of the study is considered not yet achieved or failed. And learning and teaching activities will continue to follow Cycle II, etc. This study will be stopped if all criteria of success are achieved.

3. Results and Discussion

Activity 1. Magnet

Activity 1 started by giving 5 test questions (communicating in the form of tests) to students. Each question has a different level of difficulty, namely memorization, experimentation, application, prediction, and analysis (Gredler, 2011; Kamaliyah, 2013). Students were guided by stimulant questions so that they would be able to communicate, in this case answering the test questions given. This activity was attended by 26 students. The following is discussion of 5 questions. They are communicated in the form of tests given to students.

1. **The memorization level problem "Is the strength of magnetism the same in every part of the magnet?"**
   Students were guided by using stimulant questions to answer test questions, namely *"From the experiments carried out, how do the Works of magnetism attract its poles?"* 26 students answered, "Very strong". Then it was continued with, *"Proven by what?"* 26 students answered, "Iron powder, nails, staple fillings are more attached to the magnetic poles". Then it was continued with *"How does the magnetic Work pull in the middle?"* 26 students answered, "Weak". Then continued with, *"Proven by what?"* 26 students answered, "Only a little iron powder, nails, staple fillings that are attached to the magnetic poles". Then proceed with, *"If the strength of the magnetic pull at the poles is very strong, and the strength of the magnetic pull in the middle part is weak, then is the magnetic pull strength same for every part of the magnet?"* 26 students answered, "No (different)".

   With stimulant questions, most students were helped in solving memorization levels. This can be seen from observers' observations which 26 students could follow stimulant questions and answered test questions smoothly on the question "Is the strength of magnetism the same in every part of a magnet?"

2. **The experiment level problem "How do you show that the strength of magnetic attraction in every part of the magnet is not the same?"**
   Students were guided using stimulant questions to answer the test questions, namely *"What is needed to know the strength in each part of a magnet?"* 24 students answered "magnets and magnetic materials (iron powder, small nails, springs, and staple fillings)". Then continued with *"From the learning about new magnets, how many ways can you show that the strength of magnetic attraction in every part of the magnet is not equal?"* 24 students answered, "There are 4 ways". Then continued with, *"Is it possible to show that the strength of the magnetic pull in each part of the magnet is not the same only by using one of the 4 methods?"* 24 students answered, "It is possible". Then continued with, *"Now, which magnetic material do we want to use?"* 24 students answered, "Iron powder". Then continued with, *"What should we do on magnet and iron powder?"* 24 students answered, "Magnet is sprinkled with iron powder". Then continued with, *"What should we observe?"* 24 students answered, "The amount of iron powder in part A, B, and C". Then it was continued with, *"Which part is sprinkled?"* 24 students answered, "Part A, B, and C". Then it was continued with, *"After the magnet is sprinkled with iron powder, do the iron powders attach to all magnetic parts equally?"* 24 students answered, "No". Then proceed with, *"How do they exactly?"* 24 students answered, "Iron powders are more attached to the poles (A and B) than in the middle (C)". Then continued with, *"What does it mean if the amount of iron powder attached to the magnet is not the same in each part?"* 24 students answered, "The strength of magnetic pull is not the same in each part of the magnet".

   By giving of stimulant questions, most of the students were helped in solving of experimental level questions. It can be seen that 24 students could follow up the stimulant questions smoothly and could answer test questions *"How can you show that the magnetic pulling Work in each magnetic part is not the same?"* How to prove it is by sprinkling magnetic materials to the magnet, it will be seen that the amount of magnetic materials attached varies in each part.

3. **Applied level problem "How to determine the poles of a magnet whose shape is a ball?"**
   Students were guided using stimulant questions to answer test questions, namely *"From the learning of magnet that just has been done, how is it to mark the magnetic pole?"* 24 students answered, "Many magnetic materials that are attached". Then it was continued with, *"If the*

magnet shape is a ball or spherical, how do you determine the location of the pole of the magnet?" 24 students answered, "Magnet is inserted into magnetic materials". Then proceed with, *"Where is the pole location of the spherical magnet?"* 24 students answered, "In the part that many magnetic materials are attached to the magnet".

By using stimulant questions, most students were helped in solving applied level problems. It can be seen that 24 students could answer the test question *"How do you determine the poles of the spherical magnet?"* Students said that it is determined by sprinkling magnetic materials to the magnet. It will be seen that the amount of attached magnetic materials varies in each part. The part where there are lots of magnetic materials attached is at the magnetic poles. In addition, students could also follow up and answered stimulant questions smoothly.

4. The prediction level problem as shown in Figure 2

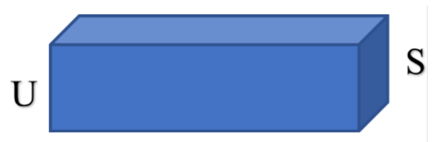

Figure 2. Magnet.

If you want to use the magnet for furniture door closers, how do you cut them (see Figure 3) so that the furniture door closers function optimally (tightly close)?"

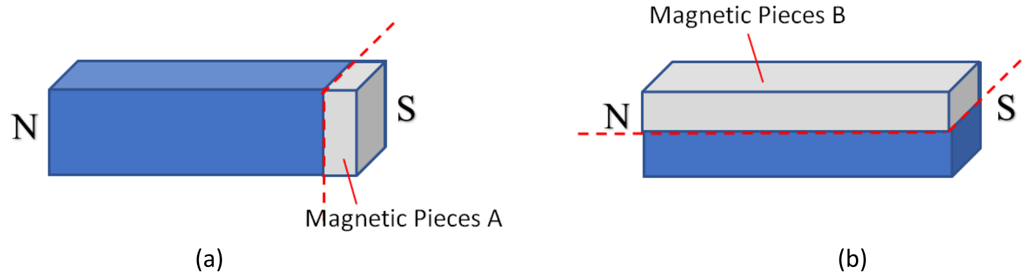

Figure 3. (a) Magnetic pieces A, and (b) magnetic pieces B.

Students were guided by using stimulant questions to answer test questions *"Which is the magnetic part that has the strongest magnetic pull?"* 24 students answered, "The magnetic pole". Then proceed with, *"Between the magnets A and B which each of them has magnetic pull Work, which one is at the maximum level for the doors if we cut it?"* 24 students answered, "A".

Using stimulant questions, most students were helped in solving prediction level problem. It can be seen that 24 students were able to follow up and answered stimulant questions smoothly and answered test questions *"If you want to use it for furniture door closers, how do we cut it so that the furniture door closers function optimally (tightly close)?"* Students answered, "Magnet A".

5. Problem level analysis "Explain why choosing the piece!"

Students were guided by using stimulant questions to answer test questions "*If you choose B, are all the parts equally strong?"* 26 students answered, "No". Then proceed with, *"If you* *choose A, are all parts equally strong?"* 26 students answered, "Yes". Then proceed with, *"So, why do you choose A?"* 26 students answered, "Because all parts are equally strong".

Using stimulant questions, most students were helped in solving the analysis level problem. This can be seen that 26 students could answer the test questions "Explain why you choose the piece!" students chose magnet A because all the parts were equally strong. In addition, students could also follow up and answer stimulant questions smoothly.

Based on the observations of the teaching and learning activities above, most students were able to answer questions with varying degrees of difficulty correctly, as seen in Table 1.

Table 1. The students test result.

Number	Level of Difficulty	Students who Answer Correctly	Students who Answer Incorrectly
1.	Memorization	26	1
2.	Experimentation	24	2
3.	Application	24	2
4.	Prediction	24	2
5.	Analysis	26	0

The researcher observed that 25 students were able to answer stimulant questions smoothly, so that 95.38% of students in the class were helped in answering the test questions given. This is supported by the results of a questionnaire where 24 students (92.30%) stated that stimulant questions that were given are in an order, logical, easy to understand, and could help them in solving problems. The result of the evaluation test sheet is that 25 students (96.15%) got scores above 70.

Observations, Questionnaires and Evaluation Tests have met the criteria of success, so it can be concluded that stimulant questions can help students solve problems with varying degrees of difficulty.

Activity 2. Work

Activity 2 begins by giving a case in everyday life (communicated in an applied form) to students. This activity was attended by 26 students. The case given to students is *"Please pay attention to Figure 4. If you want to make a terraced house, which stairs are used so that we feel comfortable and not tired when riding it?"*

(a) (b)

Figure 4. (a) Strairs A, and (b) stairs B.

Then students were guided by stimulant questions so that they could communicate, in this case solving the case in their daily life. The first stimulant question used is to guide students to complete the case, *"Which one is longer between the stairs A and stairs B?"* 23 students answered, "Stairs B". Then proceed with, *"Which one has greater slope between stairs A and stairs B?* 23 students answered, "Stairs A". Then proceed with *"If you want to feel comfortable and not easily get tired when climbing the stairs, what Force (F) should you spend? Is it big or small?"* 23 students answered, "Small". Followed by the guiding question to complete the case analysis of the Work material that students had obtained in learning, namely *"If we only want to give a small Force (F), then what about the slope angle (ϑ)?"* 23 students answered, "A small slope angle". Then proceed with *"If we only want to give a small Force (F), then what about the distance (s)?"* 23 students answered, "A long distance". After students could answer stimulant questions about the relationship of Work with slope angle, and distance, then students were led to use the last stimulant questions in order to solve the case, namely *"From the explanation above, which stairs will be qualify if we want to feel comfortable and not easily get tired?"* 23 students answered, "Stairs B".

By using stimulant questions, most students were helped in understanding and answering stimulant questions, and in this case to solve the case given. This can be seen that 23 students could say that stairs B could make them feel more comfortable and not easily tired when riding it, so that 88.46% of students in the class were helped in solving cases in the given daily life. From the value of the evaluation test, 25 students (92.59%) got scores above 70. The results of the questionnaire show that 23 students (88.46%) stated that the stimulant questions were in an order, logical, easy to understand, and could help them to solve problems.

Observation Results, Questionnaires and Evaluation Tests have met the criteria of success, so it can be concluded that stimulant questions successfully stimulate students in solving cases in the daily life.

Activity 3. Solid Pressure

Activity 3 begins by displaying Table 2 where in the table there are 2 cases in daily life regarding solid pressure. Students were asked to analyze the surface area, Work, and pressure then put them in the table (communicated in the form of analysis). This activity was attended by 26 students. Students were guided by stimulant questions so they were able to communicate, and in this case to analyze the surface area, Work, and pressure in the cases given.

Case 1: Cutting using a sharp knife is easier than using a blunt knife
The first stimulant question used to guide students in analyzing case 1 is, *"Which one is more difficult, cutting using a sharp or blunt knife?"* 24 students answered, "Cutting using a blunt knife". Then proceed with, *"Which part is called as the knife surface area?"* 24 students answered, "It's the knife that touches the object to be cut". Then proceed with *"How sharp is the knife surface area compared to the blunt knife surface area?"* 24 students answered, "The sharp knife surface area is smaller than a blunt knife". Students were asked to write their answers in a table. Then proceed with, *"Where does the Work work on the knife?"* 24 students answered, "The knife handle". Then proceed with, *"Where does the Work come from?"* 24 students answered, "From the impulses of our hand". Then proceed with, *"Given that the Work is directly proportional to the surface area, how much Work is needed to cut with a sharp knife and a blunt knife?"* 24 students answered, "Cutting using a sharp knife requires a smaller Work than cutting with a blunt knife". Students were asked to write the answers in a table. Then proceed with, "Where does the pressure work when we cut using a knife?" 24 students answered, "The pressure working on the object affected by the knife. Then proceed with, *"Given that the pressure is inversely proportional to the surface area, how much pressure is felt by the object being cut using a sharp knife and a blunt knife?"* 24 students

answered, "The amount of pressure working on an object subjected to a sharp blade is greater than the pressure felt by an object subjected to a blunt knife". Students were asked to write their answer in a table. After students understood the parts of Work, surface area, and pressure, then students were led by the last stimulant questions so that they were able to draw a conclusion, namely *"Why is cutting using a sharp knife easier than cutting using a blunt knife?"* 24 students answer, "On the sharp knife, the surface area is small, and thus a small Work producing a large pressure to cut objects so that it felt easier". Students were asked to write their answer in a table.

Table 2. Analysis solid pressure.

Num-ber	Case	Surface Area (A)	Force (F)	Pressure (P)	Conclusion
1	Cutting using a sharp knife is easier than using a blunt knife	The sharp knife surface area is smaller than a blunt knife	Cutting using a sharp knife requires a smaller Work than cutting with a blunt knife	The amount of pressure working on an object subjected to a sharp blade is greater than the pressure felt by an object subjected to a blunt knife	On the sharp knife, the surface area is small, and thus a small Work producing a large pressure to cut objects so that it felt easier
2	Standing while wearing a shoe with a wide base is more comfortable than a narrow base	The surface area of the shoe with a wide base is larger than the shoe with a narrow base	The Work working on shoes with a wide base and narrow base is the same with our body weight	The pressure working on the feet using shoes with a smaller base is larger than the pressure felt by the feet using shoes with a narrow base	A shoe with a wide base has a larger surface area, so that if it is given the same Work, the felt pressure is smaller so that the foot feels more comfortable

Stimulant questions help most students in analyzing the case "Cutting using a sharp knife is easier than using a blunt knife". This can be seen that 24 students could write their answers in tables and provided conclusions by answering that on the sharp knife, the surface area is small, and thus a small Work producing a large pressure to cut objects so that it felt easier. In addition, students could also follow up and answer stimulant questions smoothly. After students understood case 1, then proceed to case 2.

Case 2: Standing while wearing a shoe with a wide base is more comfortable than a narrow base

The first stimulant question used to guide students to analyze case 2 is, *"Which one is more tired felt by our feet, using shoes with a wide or narrow (high heels) base?"* 24 students answered, "Using a shoe with a narrow base". Then proceed with, *"Which part is called the surface area of the shoe?"* 24 students answered, "The bottom of the shoe that come into contact with the floor". Then proceed with *"How is the surface area of the shoe with a wide base compared to the surface area of the shoe with a narrow base?"* 24 students answered, "The surface area of the shoe with a wide base is larger than the shoe with a narrow base". Students were asked to write their answer in a table. Then proceed with, *"Which part does of the Work work on the shoes (In this case, shoes that are worn by human)?"* 24 students answered, "At the foot in contact with a shoe". Then proceed with, *"Where does the Work come from?"* 24 students answered, "From our body weight". Then proceed with, *"How big is the Work working on a shoe with a wide and narrow base?"* 24 students answered, "The Work working on shoes with a wide base and narrow base is the same with our body weight". Students were asked to write the answers in the table. Then proceed with, *"Where does the pressure work when we use shoes?"* 24 students answered, "The pressure of working on the feet". Then proceed with, *"Given that the pressure is inversely proportional to the surface area, how much pressure is felt by the foot using a shoe with a wide base and a narrow base?"* 24 students answered, "The pressure working on the feet using shoes with a smaller base is larger than the pressure felt by the feet using shoes with a narrow base". Students were asked to write their answer in a table. After students understood the parts of Work, surface area, and pressure, then students were led by the last stimulant question so that they could draw a conclusion, namely *"Why do we stand while wearing shoes with a wide base is more comfortable than a narrow base?"* 24 students answered, "A shoe with a wide base has a larger surface area, so that if it is given the same Work, the felt pressure is smaller so that the foot feels more comfortable". Students were asked to write their answers in a table.

Most students were helped by a stimulant question in analyzing the case "Standing while wearing a shoe with a wide base is more comfortable than a narrow base". This can be seen that 24 students could write their answers on tables and provided conclusions by answering that on a shoe with a wide base, its surface area is larger, so if it is given the same Work, the pressure is smaller felt by the foot so that the foot feels more comfortable. In addition, students could also follow up and answer stimulant questions smoothly.

Based on Activity 3, most students were able to analyze the cases raised. This can be seen that 24 students were able to write the correct answer in tables and provided conclusions from the cases raised, so that 92.30% of students in the class were helped in analyzing the cases raised correctly. This is supported by the results of a questionnaire in which 24 students (92.30%) stated that stimulant questions that were given were in an order, logical, easy to understand, and could help them in understanding the concepts and analyzing the cases in everyday life. From the results of the evaluation test, 22 students (84.61%) got scores above 70.

Observations, Questionnaires and Evaluation Tests have met the criteria of success, so it can be concluded that using questions students can be helped in understanding the concepts and in analyzing the cases.

Activity 4. Linear Straight Motion

Activity 4 starts by giving a homework (communicated in the form of home work) totaling 2 questions to students at the end of teaching and learning activities. Students were guided by stimulant questions in order that they can communicate. In this case is to understand the purpose of the question and to know the steps to do the homework. This activity was attended by 27 students.

1. **A car runs on a straight track with a fixed speed of 60 km/h (Figure 4). What is the distance traveled by the car in 60 minutes?**
   Students were asked *"Do you understand the problem?"* Some students answered that they understood while some answered that they did not understand. The first stimulant question used to guide students to understand the purpose of the question is, *"Can we describe what is happening in the problem so that we may understand better?"* 22 students answered, "Yes, we

can". Then the students were led to draw the event, "What is the picture of the event?" The following is the drawing of experimental design agreed by 22 students:

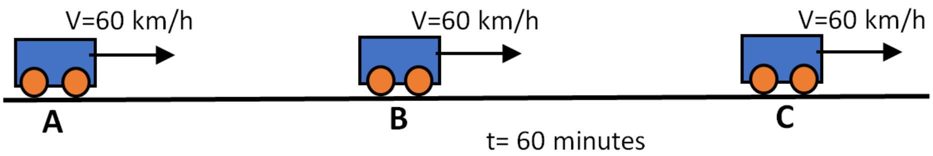

Figure 5. A car runs on a straight track.

Then proceed with, *"What is the type of motion in the question above?"* 22 students answered, "Linear Straight Motion". Then proceed with, *"Why can be said as Linear Straight Motion?"* 22 students answered, "Because the speed is the same at each point". Then proceed with, *"What is known about the problem?"* 22 students answered, "A fixed speed of 60 km/h, time of 60 minutes". Then, the students were invited to pay attention to the unit with the question *"Pay attention to the unit! Are all the units suitable?"* 22 students answered, "Not yet". Then proceed with, *"Which part has not been suitable?"* 22 students answered, "The time and unit". Then proceed with, *"Do you need to convert it?"* 22 students answered, "Yes". Then proceed with, *"Into what unit is it converted?"* 22 students answered, "It is converted to hours". Then proceed with, *"What does 60 minutes equal to in hours?"* 22 students answered, "1 hour". After completing the known part, it was proceeded with the accompanying question, *"What is asked?*. 22 students answered, "The distance it travels". Then students were led to use the Linear Straight Motion formula they already knew with the accompanying question, *"What is the formula for distance on the Linear Straight Motion?"* 22 students answered "s = v.t". Then proceed with, *"Is the value of v already known?"* 2 students answered, "It is already known". Then proceed with, *"Is the value of t already known?"* 22 students answered, "It is already known". After all questions were delivered, students were reaffirmed in order that they would be able to do homework with a guiding question, *"Because v and t are already known, can we look for the s?"* 22 students answered, "Yes, we can". Because 22 students said that they could work on problem number 1, then proceed to question number 2.

Stimulant questions helped most students to understand the intention of the home work question number 1. 22 students were able to follow up and answer stimulant questions smoothly and they said that what was known about the problem was that a car that moves in a Linear straight motion at a speed of 60 km/h, and they were asked about the distance traveled by the car for 60 minutes.

2. The Sanjaya train departs from Semarang to Jakarta at a constant speed (Figure 5). If within 15 minutes it takes a distance of 20km, then:
a. Calculate the train speeds in km/hour !
b. How long does the train take for 100 km?

Students were asked *"Do you understand the problem?"* Some students answered that they nderstood, and some answered that they did not understand. The first stimulant question used to guide students to understand the purpose of the question was, *"Can we describe what happens to the problem in order to better for us to understand?"* 22 students answered "We can". Then the students were led to draw the event, *"How is the picture of the event?"* The following is the experimental design drawing agreed by 22 students:

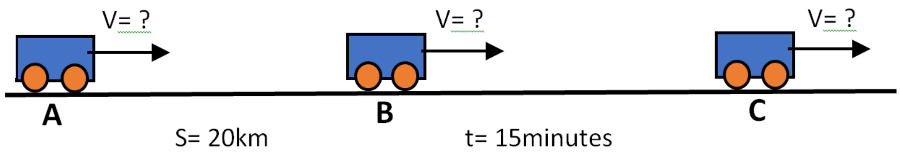

Figure 6. Train that moves with Uniform Rectilinear Motion..

Because the problem was divided into 2 points, the stimulant question was given to answer point A first.

a. Calculate the train speeds in km/hour !

The stimulant question used to question point A is, *"What type of motion is the question above?"* 22 students answered, "Linear Straight Motion". Then proceed with, *"What is known about the problem?"* 22 students answered, "The distance = 20 km, time = 15 minutes". Then, the students were invited to pay attention to the unit with a question *"Pay attention to the unit! Are all the units suitable"* 22 students answered, "Not yet". Then proceed with, *"Which part that has not been suitable?"* 22 students answered, "Time unit". Then proceed with, *"Do you need to convert it?"* 22 students answered, "Yes". Then proceed with, *"Into what unit is it converted?"* 22 students answered, "It is converted into hours". Then proceed with, *"What does 15 minutes equal to in hours?"* 22 students answered, "1/4 hour". After completing the known section, then proceed with what was asked in the question with the accompanying question, *"What is asked?"* 22 students answered, "The train speed". Then students were led to use the Straight Line Motion formula they already knew with a accompanying question, *"What is the formula to find the speed on the straight line motion?"* 22 students answered, "v = s/t". Then proceed with, *"Is the value of s already known?"* 22 students answered, "It is already known". Then proceed with, *"Is the value of t already known?"* 22 students answered, "It is already known". After all the accompanying questions were submitted, students were reaffirmed to be able to do homework with the accompanying question, *"Because s and t are already known, can we find v?"* 22 students answered, "Yes, we can".

Stimulant questions help most students to understand the meaning of the homework question number 2a. It can be seen that 22 students said that the train moves at Linear straight motion traveling at a distance of 20km in 15 minutes and they were asked about the train speed. In addition, students can also follow up and answer stimulant questions smoothly.

b. How long does the train take for 100 km?

Students were asked, *"What is known about the problem?"* 22 students answered, "The straight line motion at a distance of 100 km with speed of 80 km/hour". Then, the students were invited to pay attention to the unit with a question *"Pay attention to the unit! Are all the units suitable?"* 22 students answered, "They are already suitable". After completing the known part, it was continued with an accompanying question, *"What is asked?"* 22 students answered, "The time needed to travel 100 km". Then students were led to use the straight line motion formula they already knew with an accompanying question, *"What is the formula to find the time on straight line motion?"* 22 students answered, "t = s / v". Then proceed with, *"Is the value of s already known?"* 22 students answered, "It is already known". Then proceed with, *"Is the value of v already known?"* 22 students answered, "It is already known". After all the accompanying questions were submitted, students were reaffirmed to be able to do homework with the accompanying question, *"Because s and v are already known, can we look for them?"* 22 students answered, "Yes, we can".

By using stimulant questions, most students were helped in understanding the purpose of the home work question 2b. This can be seen that 22 students could said that the train moves at a speed of 80 km/h and what was asked is the time train takes to travel 100 km. Besides, observers also said that 22 students could follow up and answer stimulant questions smoothly.

Based on the observations of the teaching and learning activities above, most students were able to understand the intent of the home work questions and the steps in doing the homework. This can be seen that 22 students were able to follow up and answer stimulant questions smoothly and answered homework correctly accompanied by appropriate work steps, so that 81.48% students in the class were helped in understanding the purpose of the question and knew the steps to do the homework. This is supported by the results of a questionnaire where 23 students (85.19%) stated that stimulant questions that were in an order, logical, easy to understand, and can assist them in understanding the purpose of the question and to know the steps to do the homework. The result of the student evaluation test is that 20 students (74.07%) got scores above 70.

Observation results, questionnaires and evaluation tests have met the criteria of success, so it can be concluded that with the stimulant questions, students can be helped in understanding the purpose of the question and in knowing the steps to do homework.

Activity 5. Gas pressure

Topic for activity 5 is pressure on gas substance. This activity began by showing the *Kupukopter* props (Putra, 2013). Students were assigned to observe the *Kupukopter* movement (Figure 6). Students were guided by stimulant questions so they can understand the *Kupukopter* concept and its working principles so that they can later use it to make props. Then the students were given the challenge to make a *Kupukopter* with the predetermined criteria and explaining the reason their *Kupukopter* design (communicated in the form of making tools). This activity was attended by 26 students. Students were assigned to observe the *Kupukopter* movement.

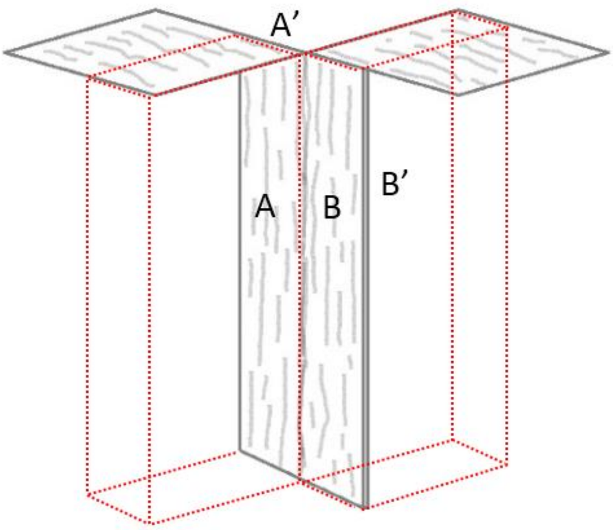

Figure 7. *Kupukopter*.

Students were asked, *"How do you move the Kupukopter when it is released?"* 23 students answered, "By spinning". Then, students were asked to come forward and asked with the question *"When viewed from above, how is the rotation? Is it in the same direction or counter-clockwise?"* The student answered, "It is a clockwise rotation". To make sure, other students were asked *"Do you agree with your friends?"* 23 students answered, "Yes, we agree". Then proceed with, *"Why can the Kupukopter rotate?"* Students looked confused. Then proceed with accompanying question *"How is the air condition at the bottom of the Kupukopter propeller?"* 23 students answered, "The air is compressed". Then the students were led by the accompanying question, *"If the air is compressed, the air pressure increases or decreases?"* 23 students answered, "It increases". Then, the students were led by a accompanying question, *"How is the air pressure in A and 'A'?"* 23 students answered, "The air pressure at A is greater than at 'A' '(pressure difference). Then proceed with, *"What is the movement of air if there is pressure?"* 23 students answered, "The air moves from bigger pressure to smaller pressure". Then proceed with, *"Because there is a difference in pressure, where does the air move?"* 23 students answered, "The air moves from A to 'A'". After students understand the concept that *Kupukopter* can rotate, students were reaffirmed with an accompanying question, *"So, why can the Kupukopter rotate?"* 23 students answered; "The compressed upward air pressure causes the air pressure at A to be greater than the air pressure at 'A' (pressure difference) and then pushes part A towards 'A' so that the Kupukopter can rotate".

At the end of the lesson, students were assigned to make the most stable rotating *Kupukopter* project with the rotation is directed counterclockwise and students were given the freedom to create something.

The results from the observation of teaching and learning activities above show that stimulant questions helped most students in applying the theory of pressure on gas substance in a *Kupukopter* props. This can be seen that 23 students were able to make a *Kupukopter* project using the gas pressure working principle with a specified criterion. Observers' observations also indicates that 88.46% students in the class were able to understand and answer stimulant questions, so that the theory of pressure on gas substances can be applied to students using a simple teaching props (*Kupukopter*). This is supported by the results of the questionnaire where 23 students (88.46%) stated that stimulant questions given were in an order, logical, easy to understand, and could help them in making simple teaching props with a specified criterion. The results of the evaluation test indicate that 23 students (88.46%) got scores above 70.

Observation Results, Questionnaires and Evaluation Tests have met the criteria of success, so it can be concluded that stimulant questions succeeds in stimulating students to apply the theory of pressure on gas substances in a simple *Kupukopter* props project.

4. Conclusion and Remarks

The results show that by giving stimulant questions, observers said that 89.22% students were more focused on learning indicated by active students who answered stimulant questions, supported by the results of the questionnaire where 89.34% students stated that stimulant questions were in an order, logical, easy to understand, and can help them in solving various forms of problems and the stimulant questions can improve their understanding of physics learning. In addition, the evaluation test results also indicated that 87.18% students understood the material. Therefore, stimulant questions can make students to be focused more on learning and can make them understand the learning materials better.

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